REMARKS

This is in response to the Official Action mailed December 23, 2003. Applicants believe that no fees are required with this response. If any fees are required, the Assistant Commissioner is authorized to charge the same to the account of Barnes & Thornburg, Deposit Account No. 10-0435, with reference to our matter number 6847-67823.

Rejection of Claims 2-4 under 35 U.S.C. § 103

The Examiner has rejected claims 2-4 under 35 U.S.C. § 103 as being unpatentable over Fang et al. (U.S. Patent No. 5,667,602A) in view of Evans (U.S. Patent No. 5,573,606). In particular, the Examiner states on page 2, section 3, through page 3, line 9, of the Office Action:

> Fang teaches an Al-Mg alloy comprising (in weight %): 2.5% Mg, up to 0.3% Si, 0.2-1.6% Mn, up to 0.6% Fe, balance aluminum (see column 5, lines 10-18), which overlaps the presently claimed composition ranges (claims 2 and 3). Fang also teaches that said alloy is suitable for die casting, and achieves elongations values of typically 17% (see table 2) and YS>17 ks (>11.95 kgf/mm2, column 3, lines 24-25). Fang does not mention Cu, and therefore is held to teach substantially zero, which falls within the presently claimed range (claim 4). Fang does not teach the presence of Be in said alloy.
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> However, Evans teaches that the addition of less than 0.003% Be is useful for preventing the oxidation of magnesium in Al-Mg alloys (column 2, line 47 to column 3, line 8). It would have been obvious to one of ordinary skill in the art to add Be to the Al-Mg alloy of Fang because Evans teaches the addition of les than 0.003% Be is useful for preventing the oxidation of magnesium in Al-Mg alloys (column 2 line 47 to column 3 line 8).
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> Overlapping ranges have been held to be a prima facie case of obviousness, see MPEP §2144.05. It would have been obvious to one of ordinary skill in the art to select any portion o the range, including the claimed range, from the broader range disclosed in the prior art, because the prior art finds that said composition in the entire disclosed range has a suitable utility.

Applicants respectfully traverse the subject rejection.

Discussion of Claim 2

Claims 1 and 2 read as follows (note claim 1 is presented since claim 2 includes the limitations of this independent claim):

1. An aluminum based alloy, said alloy comprising:
1.0 - 2.0% by weight manganese;
a maximum of 0.6% by weight iron;
0.001% to 0.003% by weight beryllium; and
the remainder being aluminum.

2. The aluminum alloy of claim 1 further comprising 2.5 - 4.0% by weight magnesium said alloy characterized by an elongation value of at least 17%.

Accordingly, the Examiner will appreciate that an alloy of claim 2 will include 1.0 - 2.0% by weight Mn, a maximum of 0.6% Fe, 0.001% to 0.003% Be, 2.5 - 4.0% Mg, with the remainder being Al. The Examiner submits that the proposed combination of Fang et al. and Evans et al. render alloys of claim 2 obvious. As indicated above, Applicants respectfully disagree.

The Applicants respectfully remind the Examiner that to combine references (A) and (B) properly to reach the conclusion that the subject matter of a patent would have been obvious, case law requires that there must be some teaching, suggestion, or inference in either reference (A) or (B), or both, or knowledge generally available to one of ordinary skill in the relevant art that would lead one skilled in the art to combine the relevant teachings of references (A) and (B). **Consideration must be given to teachings in the references that would have led one skilled in the art away from the claimed invention. A claim cannot properly be used as a blueprint for extracting individual teachings from references.** *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.,* 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985; emphasis added).

In this particular instance the Examiner relies upon Fang et al. as the primary reference. In the subject Office Action the Examiner takes the position that since Fang et al. does not disclose the use of Cu in the described alloy, Fang et al. is held to teach that zero, or no, Cu is used in the alloy. Applicants respectfully point out that the Examiner acknowledges that Fang et al. also does not disclose the use of Be in the described alloy. Therefore, in order to be consistent with the Examiner's position with respect to Cu, Fang et al. must also be held to teach that zero, or no, Be is used in the alloy. Furthermore, Applicants respectfully point out to the Examiner that the secondary reference relied upon to cure the deficiencies of Fang et al, i.e. Evans et al., clearly teaches an alloy which contains less than 1% by weight of Mn.

In particular, Evans et al. state the following with respect to the alloy described in this reference:

> The present invention relates to an aluminum base die casting alloy having substantially improved mechanical properties, and a method for making die cast products from the alloy. More particularly the improved aluminum based alloy comprises 2.5-4.0% by wieght magnesium, a maximum of 0.4% by weight manganese, a maximum of 0.6% by weight iron, a maximum of 0.45% by weight silicon, a maximum of 0.10% by weight copper, less than 0.003% by weight beryllium with the remainder being aluminum. This aluminum alloy is particularly useful for die casting light weight automobile component parts. (see column 1, lines 6-16)

> Iron is typically added to die casting aluminum alloys for the purpose of preventing the aluminum alloy from sticking to a metal die during the course of the die casting operation and enhancing the release of the aluminum alloy from the die. However, the addition of iron will lower the elongation of the aluminum alloy. Manganese is added to aluminum alloys for the purpose of eliminating the adverse effect of the addition of iron. However, an excess of manganese can result in a lowering of the mechanical strength of the aluminum alloy. (see column 2, lines 37-46)

> Applicants' present invention is directed to a die casting aluminum alloy having improved elongation and comprising 2.5-4.0% by weight magnesium, a maximum of 0.4% by weight manganese, a maximum of 0.6% by weight iron, a maximum of 0.45% by weight silicon, a maximum of 0.10% by weight copper, less than 0.003% by weight beryllium, with the remainder being aluminum. This aluminum alloy is useful for forming light weight die cast articles having superior elongation over die cast articles formed from currently available aluminum die cast alloys. (see column 3, lines 9-18)

> A preferred embodiment in accordance with the present invention comprises 2.5%-4.0% by weight magnesium, a maximum of 0.10% by weight zinc, a

> maximum of 0.4% by weight manganese, a maximum of 0.6% by weight iron, a maximum of 0.45% by weight silicon, a maximum of 0.10% by weight copper, less than 0.003% by weight beryllium with the remainder being aluminum. (see column 3, lines 66-67, through column 4, lines 1-5)

It is clear from the above passages that Evans et al. teach an alloy that has less than less than 1% by weight of Mn.

In light of the above discussion it is apparent that the Examiner has attempted to combine Fang et al. and Evans et al. **without giving consideration to the teachings in these references that would lead one skilled in the art away from the claimed invention.** For example, as indicated by the Examiner, Fang et al. teaches that **no** Be is to be used in the alloy disclosed therein. Accordingly, in light of the teachings of Fang et al., an artisan would **not be** motivated to add Be to an alloy. Furthermore, while Evans et al. do discuss the addition of Be to alloys, this reference only teaches the addition Be to alloys that have less than 1% by weight of Mn. In fact, Evans et al. indicate several times that the alloys described therein should contain a **maximum of 0.4%** by weight manganese. Therefore, in light of the teachings of Evans et al. an artisan would not be motivated to produce an alloy having a relatively high Mn content such as that recited in claim 2, i.e. 1.0 - 2.0% by weight manganese. Therefore, Applicants respectfully submit that the Examiner has improperly utilized the rejected claim as a blueprint for extracting individual teachings from Fang et al. and Evans et al. without considering the teachings of these references as a whole which clearly teach away from the claimed invention (e.g. Fang's teaching that **no** Be is to be used in the alloy disclosed therein, and Evans disclosure that the alloys described therein should contain a **maximum of 0.4%** by weight manganese). Accordingly, the Applicants respectfully submit that the Examiner has failed to establish a proper case of prima facie obviousness and request that the rejection be withdrawn.

If after considering the above discussion the Examiner maintains the subject rejection the Applicants respectfully request Examiner to explain, with particularity, (i) why an artisan would be motivated to add Be to an alloy when Fang et al. teach that no Be is to be added and (ii) why an artisan would be motivated to produce a high Mn content alloy such as that recited in claim 2 (i.e. 1.0 - 2.0% by weight Mn) when Evans et al. clearly teaches that alloys should contain a **maximum** of 0.4% by weight of Mn.

Discussion of Claims 3 and 4

Each of claims 3 and 4 include claim 2 as a base claim. Therefore, the limitations recited in claim 2 are also present in each of claims 3 and 4. Accordingly, the discussion with respect to claim 2 is applicable to each of claims 3 and 4 as well. As such, Applicants also respectfully request that the rejection of claims 3 and 4 also be withdrawn.

Rejection of Claims 12, 19 and 20 under 35 U.S.C. § 103

The Examiner has rejected claims 12, 19 and 20 under 35 U.S.C. § 103 as being unpatentable over Fang et al. (U.S. Patent No. 5,667,602A). In particular, the Examiner states on page 3, section 4, through page 4 of the Office Action:

> Fang teaches an Al-Mg alloy comprising (in weight %): 2.5% Mg. up to 0.3% Si, 0.2-1.6% Mn, up to 0.6% Fe, balance aluminum (see column 5, lines 10-18), which overlaps the presently claimed composition ranges (claims [sic]. Fang also teaches that said alloy is suitable for die casting, and achieves elongations values of typically 17% (see table 2) and YS>17 ksi (>11.95 kgf/mm^2, column 3, lines 24-25); Fang does not mention Cu or Be, and therefore is held to teach substantially zero, which falls within the presently claimed ranges. Fang does not teach 18% elongation, but the examiner asserts that 17% elongation, taught by Fang at Table 2, is a close approximation of the presently claimed "greater than or equal to 18%."
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> Overlapping ranges have been held to b ea prima facie case of obviousness, see MPEP §2144.05. It would have been obvious to one of ordinary skill in the art to select any portion of the range, including the claimed range, from the broader range disclosed in the prior art, because the prior art finds that said composition in the entire disclosed range has a suitable utility.

Applicants respectfully traverse the rejection of claims 12, 19, and 20.

Discussion of Claim 12

Claim 12 as amended reads as follows:

12. An aluminum based alloy for use in forming a die cast product, said alloy having an elongation value of at least 17%, said alloy comprising

2.5 - 4.0% by weight magnesium;

1.0 - 2.0% by weight manganese;

0.25 - 0.6% by weight iron;

0.2 - 0.45% by weight silicon;

0.001% to 0.003% by weight beryllium;

the remainder being aluminum.

Therefore, the Examiner will appreciate that like claim 2, claim 12 recites an alloy that includes 0.001% to 0.003% by weight beryllium and 1.0 - 2.0% by weight manganese. Therefore, the discussion with respect to claim 2 is pertinent to claim 12. Accordingly, the Applicants respectfully request that the rejection of claim 12 be withdrawn as well.

Discussion of Claim 19

Claim 19 as amended reads as follows:

19. A structural article of manufacture comprising an aluminum alloy having a yield strength of greater than or equal to 11.95 kgf/mm^2 and an elongation value of greater than or equal to 18%, said aluminum alloy comprising

2.5 - 4.0% by weight magnesium;
1.0 - 2.0% by weight manganese;
a maximum of 0.6% by weight iron;
a maximum of 0.45% by weight silicon;
a maximum of 0.10% by weight copper;
0.001% to 0.003% by weight beryllium;
the remainder being aluminum.

Therefore, the Examiner will again appreciate that like claim 2, claim 19 recites an alloy that includes 0.001% to 0.003% by weight beryllium and 1.0 - 2.0% by weight manganese. Therefore, the discussion with respect to claim 2 and claim 12 is pertinent to claim 19. Accordingly, the Applicants respectfully request that the rejection of claim 19 be withdrawn as well.

Discussion of Claim 20

Claim 20 includes claim 19 as a base claim. Therefore, the limitations recited in claim 19 are also present in claim 20. Accordingly, the discussion with respect to claim 19 is applicable to claim 20 as well. As such, Applicants also respectfully request that the rejection of claim 20 also be withdrawn.

Rejection of Claims 13 and 14 under 35 U.S.C. § 103

The Examiner has rejected claims 13 and 14 under 35 U.S.C. § 103 as being unpatentable over Fang et al. (U.S. Patent No. 5,667,602A) as applied to claims above, in view of "Aluminum and Aluminum Alloys," pp. 88-90. In particular, the Examiner states on page 4, section 5 of the Office Action:

> Fang does not teach 0.05-0.10% Cu in said Al-Mg alloy. However, as seen in "Aluminum and Aluminum Alloys," p. 90, substantially similar Al-Mg 5xx series casting alloys typically have 0.15% max. Cu. "Aluminum and Aluminum Alloys" teaches at the 3rd column of page 90 that Cu additions to casting alloys "generally reduces resistance to general corrosion." It would have been obvious to one of ordinary skill in the art to include 0.15% max. Cu, as taught by "Aluminum and Aluminum Alloys" teaches at the 3rd column of page 90 that Cu additions to casting alloys "generally reduces resistance to general corrosion."
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> Concerning claim 14, Fang does not mention Zn and therefore is held to be substantially zero, which overlaps the presently claimed range.

Each of claims 13 and 14 include amended claim 12 as a base claim. The Examiner's reliance on "Aluminum and Aluminum Alloys," pp. 88-90 does not cure the deficiencies of Fang et al. Therefore, the discussion with respect to claim 12 is germane to each of claims 13 and 14 and the Applicants respectfully request that the subject rejection of these claims be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, it is submitted that this application is in condition for allowance. Action to that end is hereby solicited.

Respectfully submitted

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